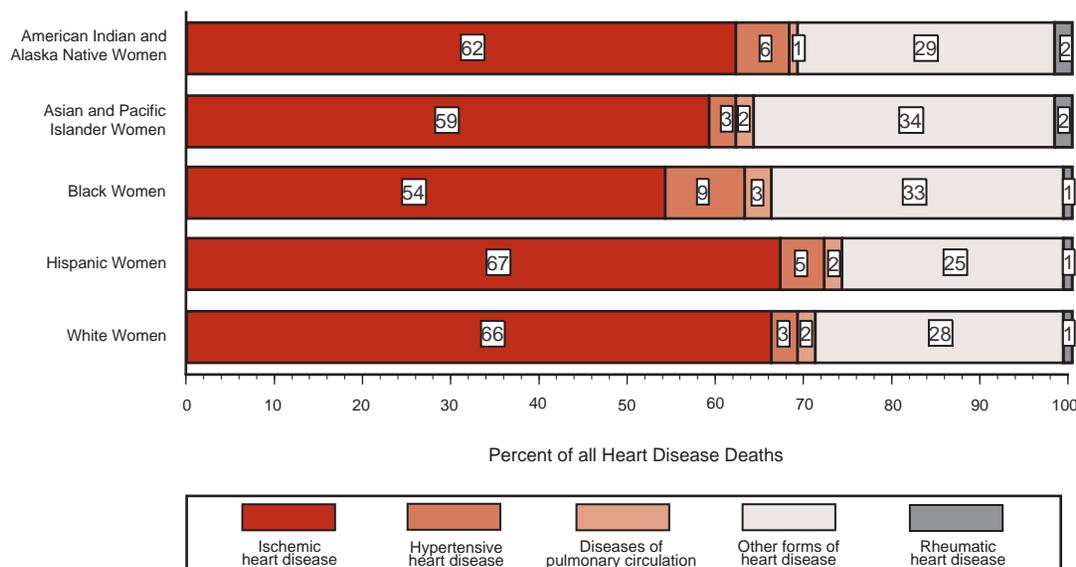


# 1 Racial and Ethnic Disparities in Heart Disease among Women

## Racial and Ethnic Disparities in Heart Disease among Women

In February 1998, at the direction of the President, the Department of Health and Human Services launched the *Initiative to Eliminate Racial and Ethnic Disparities in Health*. One of the goals of this initiative is to eliminate disparities in cardiovascular disease by the year 2010. Efforts to meet this goal must include the analysis and presentation of accurate and timely data on the current burden of cardiovascular disease among racial and ethnic minorities in the United States. This publication is part of that effort. We examined geographic disparities in heart disease mortality for American Indian and Alaska Native women, Asian and Pacific Islander women, black women, Hispanic women, and white women. These race and ethnicity categories have been officially adopted by the federal Office of Management and Budget (see Appendix B). Under the federal data reporting scheme, Hispanic is considered a designation of ethnicity, not race. Therefore, data for Hispanic women were included within each of the four racial categories, and also analyzed separately. We use the terms “black” and “African American” interchangeably throughout this publication; similarly, “Latina” and “Hispanic” were used interchangeably as well.

**Figure 1.1**  
Specific categories of heart disease deaths among women 35 years of age and older, by race and ethnicity, 1991-1995



### The Social Construction of Race

Following several experts in human evolution,<sup>1,2</sup> we recognize *race* and *ethnicity* as valid scientific categories, but *not* as valid biological or genetic categories. The health sciences include both biological and social sciences, and from a social science perspective race and ethnicity categories reflect the reality of socially distinct groups in the United States. Ethnic groups typically share certain cultural, linguistic, and other characteristics, and are often multiracial. Contemporary race divisions are the result of historical events, in particular the often hostile encounters (e.g. wars and colonizations) between population groups that were formerly geographically isolated. Differences in physical appearance between population groups that were politically in conflict acquired inflated social significance, compared with differences in physical appearance among individuals of the same group.

The idea that geographically-defined human social groups, such as “Africans” or “Japanese,” were actually biologically and genetically distinct human “races” or “subspecies” gained popular credence in the nineteenth and early twentieth centuries.<sup>3</sup> Most of the scientific evidence generated during those times to support theories of biologically distinct human races has since been discredited and disavowed by many scientists.<sup>3,5</sup> These scientists have demonstrated that the significance attributed to these physical characteristics is wholly social and historical in origin, and does not reflect biologically or genetically important differences among people.<sup>1</sup> However, there is still popular belief in the idea that the superficial differences in physical appearance among people of various racial and ethnic groups must be linked to more profound and significant genetic differences in behavior, intelligence, and susceptibility to disease.

Empirical evidence from population biology demonstrates why the theory of genetically distinct races is incorrect. First, all human beings share the same genes. This is what defines us as a species. Each person has two copies of essentially all genes, because our chromosomes come in pairs – one inherited from our mother, and one inherited from our father. Slight variations

in the form, and sometimes the function, of individual genes do exist in human populations. These gene variations are called *alleles*. However, 75% of all human genes are monomorphic, meaning that only one allele exists in all people.<sup>1</sup> Only a very small fraction of all human alleles impact severely on gene function in a way that leads to disease. Most importantly, there are no particular alleles (whether detrimental, beneficial, or neutral) that can be found to exist only in one racial or ethnic population and not in others. For example, the allele of the hemoglobin gene that leads to sickle cell disease, typically thought to be solely found in Africans, is also found in some Asian populations.

In summary, the five racial and ethnic groups described in *Women and Heart Disease* are socially, but not biologically, distinct groups. Moreover, we recognize that each of these broad racial and ethnic groups includes people of tremendous diversity with regard to culture, socioeconomic status, heritage, and area of residence. If we accept the idea that different racial and ethnic groups do not vary systematically in their inherent genetic susceptibility to disease, then to what can we attribute racial and ethnic disparities in heart disease mortality? Current research suggests a number of possibilities, including differences in social class, culture, behavioral risk factors, psychosocial risk factors, and the direct effects of racism, segregation, and discrimination.<sup>6</sup>

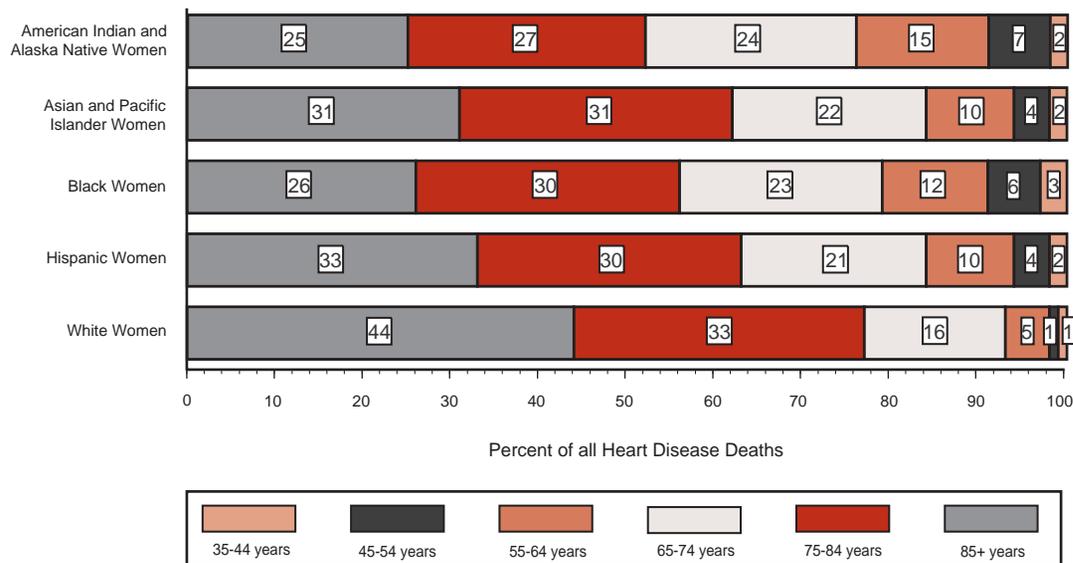
### Misreporting of Race and Ethnicity on Death Certificates

An important concern for examining racial and ethnic disparities in heart disease mortality is the accuracy of race and ethnicity information reported on the death certificate. Separate entries are available for race (American Indian or Alaska Native, Asian or Pacific Islander, black, and white) and Hispanic origin (yes or no). Unfortunately there is evidence from several studies that race and ethnicity are not always reported accurately on death certificates. There are instances when American Indians and Alaska Natives along with Asian and Pacific Islanders are mistakenly identified as white, and His-

panics are mistakenly reported as non-Hispanics. This misreporting results in artificially lower mortality rates for those racial and ethnic groups. It is uncommon for race to be misreported for blacks. Misreporting of race and ethnicity on death certificates does not significantly increase mortality rates for whites, because the number of decedents who are misidentified as white on their death certificates is small relative to the very large white population.

One study<sup>7</sup> compared race and ethnicity information from the Current Population Survey with similar data on death certificates for 43,000 individuals who died during 1979 to 1985. The study found that race was coded incorrectly on the death certificate for 0.8% of whites, 1.8% of blacks, 17.6% of Asian and Pacific Islanders, and 26.6% of American Indians. Hispanic ethnicity was miscoded on the death certificate for 10.3% of individuals who self-identified as Hispanic on the survey, with the greatest errors for persons who identified themselves as Cuban or “other Hispanic.” A similar study found high rates of

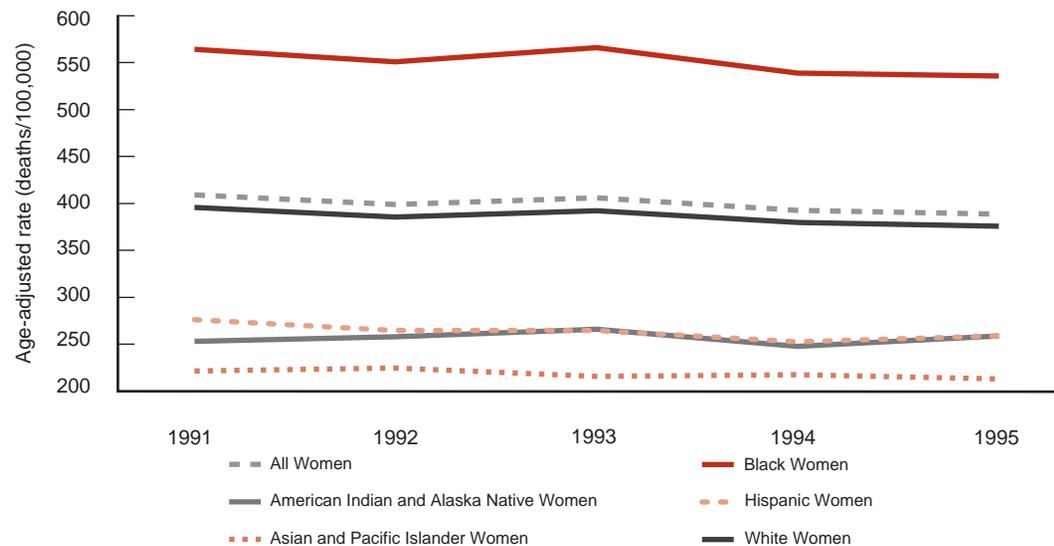
Figure 1.2  
Age distribution of heart disease deaths among women 35 years of age and older, by race and ethnicity, 1991-1995



disagreement between AIDS case reports and death certificates for American Indians (46%), Asians and Pacific Islanders (12%), and Hispanics (14%).<sup>8</sup> A study of infant mortality in California found significant underestimation of rates for American Indians and Asians.<sup>9</sup> Correct reporting of American Indian origin on death certificates was found to be associated with tribal affiliation and percentage of American Indian ancestry in a study that linked IHS records and death certificates in Washington State.<sup>10</sup>

A recent report from the national Center for Health Statistics estimates that death rates (for all causes of death combined) corrected for both misreporting of race and ethnicity on the death certificates, and population undercounts in census files, would be 21% higher than currently reported for American Indians and Alaska Natives, 11% higher for Asians and Pacific Islanders, and 2% higher for Hispanics.<sup>11</sup> No studies to date have evaluated the extent of geographic variation in the accuracy of reporting race and ethnicity on the death certificate and in the degree of population undercounts.

**Figure 1.3**  
*Trends in heart disease mortality among women 35 years of age and older, by race and ethnicity, 1991-1995*



### **Specific Categories of Heart Disease Deaths Among Women**

The definition of heart disease used in this study was the category “diseases of the heart” as defined by the National Center for Health Statistics (see Appendix B for details). This definition encompasses a variety of forms of heart disease including rheumatic heart disease (a consequence of untreated streptococcal infection that can cause permanent damage to the heart valves over time), diseases of pulmonary circulation, hypertensive disease, ischemic heart disease (narrowing of the coronary arteries which decreases the supply of blood to the heart), and other forms of heart disease (including pericarditis, myocarditis, mitral valve disorders, cardiomyopathy, and heart failure).

For women of all racial and ethnic groups, ischemic heart disease was the primary specific category of death from diseases of the heart (Figure 1.1). Among all women aged 35 years and older, 64% of heart disease deaths were attributed to ischemic heart disease. The contribution varied somewhat according to race and ethnicity, with the largest percentage (67%) occurring among Latina women and the smallest percentage (54%) occurring among African American women. The proportion of heart disease deaths from hypertensive disease also varied notably according to race and ethnicity. Among black women, 9% of heart disease deaths were a consequence of hypertensive heart disease, compared with only 3% of heart disease deaths for white women and Asian and Pacific Islander women.

### **Age Distribution of Heart Disease Deaths Among Women**

Heart disease mortality increases dramatically with age, with elderly women (85 years and older) at highest risk of death. Heart disease deaths that occur before the age of 65 are generally considered premature, preventable deaths, and are therefore of particular public health significance. During 1991-1995, the proportion of heart disease deaths that occurred prematurely among women varied considerably by race and ethnicity (Figure 1.2). The least favorable age distributions of heart disease deaths were experienced by American Indian and Alaska

Native women (23.4% of deaths were premature) and black women (21.7% of deaths were premature). In contrast, only 7.7% of heart disease deaths among white women occurred prematurely. White women also experienced the highest proportion of heart disease deaths after age 75 years (76.7%).

### Heart Disease Death Rate Trends for 1991-1995

Disparities in the level of heart disease mortality among the five race and ethnicity groups of women were observed for the years 1991-1995 (Figure 1.3). The highest rates occurred among African American women, followed by white women, American Indian and Alaska Native women, and Asian and Pacific Islander women. The heart disease death rates for Hispanic women of all races were similar to the rates for American Indian and Alaska Native women. Throughout the time period, there was a more than twofold difference between the lowest rates (Asian and Pacific Islander women) and the highest rates (black women). The low heart disease death rates nationwide for Asian and Pacific Islander women are predominantly a reflection of the mortality experience of Asian women. A study of heart disease mortality in Hawaii found that rates for Hawaiian and other Pacific Islander women were two to six times higher than the death rates for Chinese, Philipino, and Japanese women.<sup>12</sup>

In 1995, the heart disease death rates among black women were 2.6 times higher than the rates for Asian and Pacific Islander women, 2.1 times higher than the rates for Latina women as well as American Indian and Alaska Native women, and 1.4 times higher than the rates for white women. However, as discussed above, misreporting of race and ethnicity on the death certificate may have led to spuriously lower heart disease death rates for American Indians and Alaska Natives and Asians and Pacific Islanders, compared with African Americans and whites.

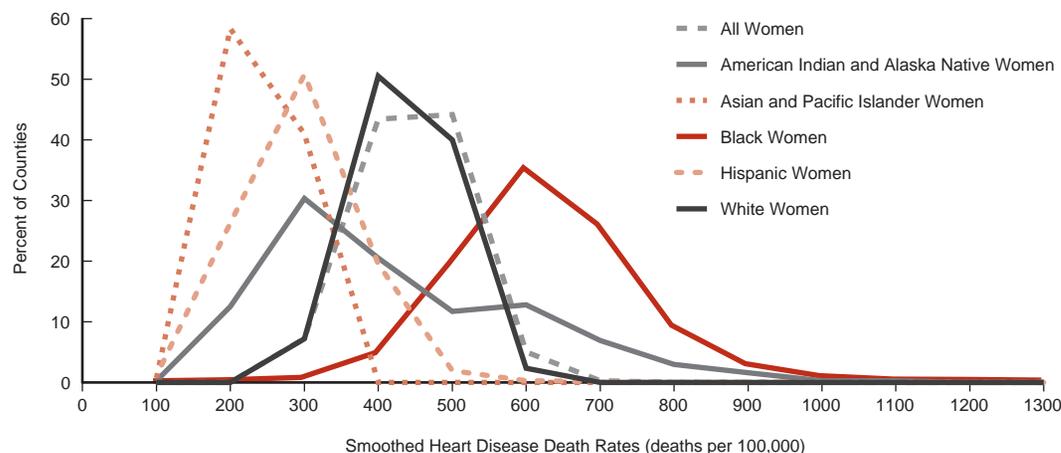
Although the 1970s and 1980s were times of substantial declines in heart disease death rates among women, the rate of decline slowed substantially in the 1990s. The trend data pre-

sented here indicate that among women of each race and ethnicity group there was very little decline in heart disease death rates in the 1990s. On average, heart disease death rates dropped 1.25% per year for women of all racial and ethnic groups combined. (The average annual percent change in death rate was calculated by subtracting the 1991 rate from the 1995 rate, dividing by the 1991 rate, and then dividing by 4). Hispanic women and Asian and Pacific Islander women experienced slightly faster declines (1.53% and 1.46% per year, respectively) than black women (1.25% per year) and white women (1.24% per year). American Indian and Alaska Native women experienced negligible declines in heart disease mortality from 1991 to 1995 (0.54% per year).

### County Variation in Heart Disease Death Rates

Considerable variation in heart disease death rates for women across counties was evident for 1991-1995 (Figure 1.4). The

Figure 1.4  
Frequency distribution of smoothed county heart disease death rates for women 35 years of age and older, by race and ethnicity, 1991-1995



county distributions highlight the disparities in the burden of heart disease among women of different races and ethnicities. By focusing on the tails of the distributions it is evident that there was very little overlap in the county rates for Asian and Pacific Islander women and the rates for African American women. In other words, the highest county heart disease death rates for Asian and Pacific Islander women were lower than almost all of the county rates for black women. For white women, the high end of the tail of the distribution was about midpoint in the distribution of county rates for African American women.

The peaks in the distribution graphs for each racial and ethnic group indicate the most common county heart disease death

rates for that group. The peak occurs at a much higher level for blacks than for any other group. Among Asian and Pacific Islander women, the most common heart disease death rate for counties is lower than for any of the other groups. The distribution of county heart disease death rates for American Indian and Alaska Native women is much broader than for other groups of women, with a primary peak around 300 deaths per 100,000 women and a secondary peak around 600 deaths per 100,000 women. The bimodal distribution of county heart disease rates highlights the geographic variation in the burden of heart disease across the populations of the numerous Tribal Nations that were combined into one category for the purposes of data analysis.

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<sup>1</sup> Lewontin R. *Human Diversity*. New York: Scientific American Books, 1995.

<sup>2</sup> Gould SJ. *The Mismeasure of Man*. New York: W.W. Norton and Company, 1981.

<sup>3</sup> Smedley A. *Race in North America: Origin and Evolution of a Worldview*. Boulder, CO: Westview Press, 1993.

<sup>4</sup> Freeman HP. The meaning of race in science – considerations for cancer research. *Cancer* 1998; 82(1):219-225.

<sup>5</sup> Cooper R. A note on the biologic concept of race and its application in epidemiologic research. *American Heart Journal* 1984; 108:715-723.

<sup>6</sup> Williams DR, Collins C. U.S. socioeconomic and racial differences in health: patterns and explanations. *Annual Review of Sociology* 1995; 21:349-386.

<sup>7</sup> Sorlie PD, Rogot E, Johnson NJ. Validity of demographic characteristics on the death certificate. *Epidemiology* 1992; 3(2):181-184.

<sup>8</sup> Kelly JJ, Chu SY, Diaz T, Leary LS, Buehler JW. Race/ethnicity misclassification of persons reported with AIDS: the AIDS mortality project groups and the supplement to HIV/AIDS surveillance project group. *Ethnicity and Health* 1996; 1(1):87-94.

<sup>9</sup> Farley DO, Richards T, Bell RM. Effects of reporting methods on infant mortality rate estimates for racial and ethnic subgroups. *Journal of Health Care for the Poor and Underserved* 1995; 6(1):60-75.

<sup>10</sup> Frost F, Tollestrup K, Ross A, Sabotta E, Kimball E. Correctness of racial coding of American Indians and Alaska Natives on the Washington state death certificate. *American Journal of Preventive Medicine* 1994; 10(5):290-294.

<sup>11</sup> Rosenberg HM, Maurer JD, Sorlie ED, Johnson NJ, et al. Quality of death rates by race and Hispanic origin: a summary of current research. *Vital and Health Statistics Reports*. Rockville MD: National Center for Health Statistics (in press).

<sup>12</sup> Braun KL, Yang H, Onaka AT, Horiuchi BY. Asian and Pacific Islander mortality, differences in Hawaii. *Social Biology* 1997; 44(3-4):213-26.



